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(71) Applicant (for all designated States except US): **UNIVERSITY OF MIAMI** [US/US]; 1475 NW 12th Avenue, Miami, FL 33136 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ENGLEHARDT, James, D.** [US/US]; 419 Sevilla Avenue, Coral Gables, FL 33134 (US). **MEEROFF, Daniel, E.** [US/US]; 6011 NW 68th Street, Parkland, FL 33067 (US).

(74) Agent: **JETTER, Neil, R.**; Akerman Senterfitt, 222 Lakeview Avenue, Suite 400, P.O. Box 3188, West Palm Beach, FL 33402-3188 (US).

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(54) Title: METAL MEDIATED AERATION FOR WATER AND WASTEWATER PURIFICATION

(57) Abstract: A water or wastewater treatment method includes the steps of providing an Fe source, the Fe source including an Fe salt or relatively high surface area Fe metal arrangement, such as a volume of Fe filings, steel wool, or Fe nanoparticles. The Fe source is contacted with influent water including at least one contaminant or chelating agent bound contaminant in the presence of an oxygen comprising gas flow, such as air. The outlet flow following the contacting step provides a reduction in a concentration of the contaminant and/or chelating agent from its level in the influent through oxidation of the contaminant or precipitation, co-precipitation, or reduction to metal form of the contaminant with the Fe source to form a metal sludge. The method can include a separating step including sedimentation or filtration of the transition metal sludge from the outlet flow.

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